Just as a DNA sequence is the composition of elements allotted for a living being, so a sentence is the composition of the linguistic elements for a given language. Units, compositional rules, alternation/permutation, exceptions/irregularities as well as functions associated with a certain level of sequencing (of appearance, behavior, intention, etc.) operate similarly in these two domains. Language is part of human cognition ability, which in principle is based on processing procedures such as logical inference, analogy, contrastive pattern recognition and the like. For linguists, we are looking for regularities in languages. We are developing rules to generate regular word sequences. We are trying to interpret the mutual understanding between the speaker and the recipient, while handling a certain set of given word sequences. But not everything in a language is computable. Exceptions in terms of generative rules are sometimes quite commonly used in natural language. Concerning languages, computation is meant to operate both at the level of abstract theoretical inference and at observing empirical classification of word sequences. To emphasize the importance of the synergy of language and computation concerning the understanding and modeling of how human language is employed, this special issue includes four papers. The topics cover: (1) formal semantics: computation of meaning from a theoretical point of view; (2) contrastive/typological linguistics: understanding and classification of word order sequences in different languages; (3) corpus linguistics: empirical studies of production unit sequences; and (4) quantitative methodology: general approaches to conducting analysis on association of words or word sequences. Aside from the aspects of language and computation, these studies deal with linguistic phenomena in multiple languages: Chinese, English, French, and Thai. We hope to make a statement that language is operated by computation, but with ‘common exceptions’. Thus, for linguistics to develop into a scientific discipline, we need to embrace philosophical, empirical, mathematical, and experimental approaches.

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